Additional ways of Integrating Community-based Language Documentation and Language Revitalization

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February 28, 2019

The Project
Deep learning speech recognition for Seneca (see)

Goal: Utilize 'cutting-edge' computational techniques to develop tools for revitalizing and documenting an under-resourced language

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- Automatic Speech Recognition (cf. SIRI)

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- Automatic Speech Recognition (cf. SIRI)
- Machine translation from Mohawk to Seneca

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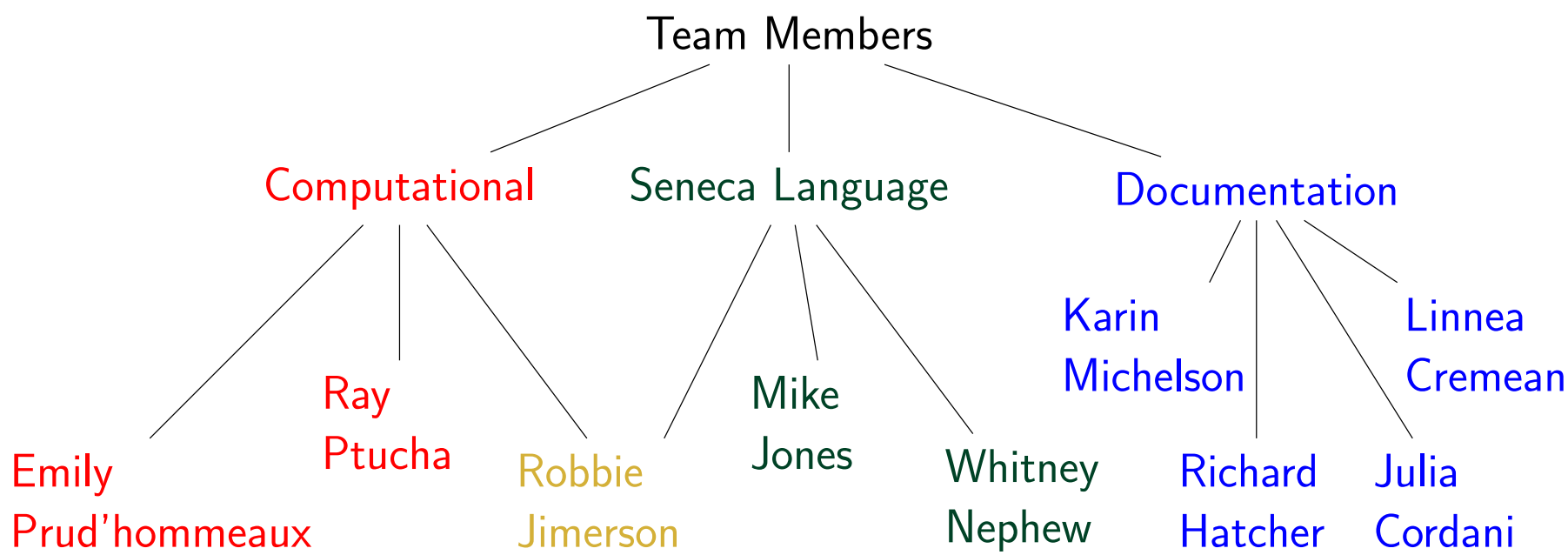
However, there is a active growing community of L2 language speakers.

- Speak with first langauge speakers daily
- Numerous adult immersion programs

Seneca Territory - c. 1650 & present

Team Members



Earlier models of Research

The Haudenosaunee peoples have a long history of being researched by linguists and anthropologists.

- Lounsbury's (1946, 1953) work on Oneida language
- Fenton's (1936, 1942) studies on Seneca ceremony
- Chafe's (1963, 1967, 1977) grammatical work on Seneca

"These peoples of the Longhouse are among the most studied of all North America Indians; indeed, many would argue that they are *over*studied." (Richter 1992)

Community-based Research

Recent trend in linguistic fieldwork particularly in North America & Australia

- "...[R]esearch that is on a language, and that is conducted *for*, *with*, and *by* the language-speaking community within which the research takes place and which it affects." (Czaykowska-Higgins 2009)
- "...community involvement through all stages of the research." (Rice 2011)

Computational Community-based Research

CoLang 2018 - Learning to collaborate

Benefit from attending CoLang together!
Before CoLang

- Thought of collaboration as 'interview process' convincing community of linguist's value
- Skeptical of working with linguist

After attending CoLang

- Importance of developing relationships and honest in the motivations and goals
- Importance of practical skills, e.g. ELAN, Audacity, FLEx, equipment choices & archiving practices

Main Goal of Project

- Speech data collection for Seneca ASR development
  - previously recorded speech (by linguists, community)
  - contemporary recording
- Ancillary uses of ASR
  - Automated first-pass for documentary transcription
  - Force aligned natural speech corpus for corpus phonological studies

Secondary Goals

- FLEx repository for L2 teachers
  - Notable degree of linguistic variation within Seneca speech community cf. (Goddard 2010, Bird 2008)
  - Most language teachers are L2 learner over 70 years
  - Students can question the language judgments and curriculum decisions
  - A repository of annotated Seneca speech data, easily accessible by L2 Seneca language teachers
    - aid in curriculum design
    - provide "justification" for contradictory judgments
- Develop machine translation tools for converting Mohawk materials into Seneca

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  - Create deep learning Seq2Seq translation model

Relationship between Documentation and Revitalization

Documentation feeds revitalization with linguistic material

- Recordings
- Sketch/pedagogical grammar
- Dictionary

Revitalization can feed documentation

- Documentation tools
- Recording opportunities
- Corpora (spoken, text)

Acknowledgements

We would like to give thanks to all our elder speakers across the Seneca communities.

- esp. Dr. Hazel Dean & Sandy Jimerson-Dowdy

Support from NSF RI/DEL grant 1761562 & 1761477

- *Collaborative Research: Deep learning speech recognition for documenting Seneca, a Native American language, and other acutely under-resourced languages*

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